

AVALANCHE RESCUE REPORT

International Commission for Alpine Rescue

Lawinenkommission • Commission d'avalanche • Avalanche Rescue Commission



IKAR-CISA

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The following report is based on notes and commentary by Atkins, and on the official minutes prepared by Mr. Robert Bissig (CH), and supplemented by comments by other members as Atkins had to leave the meetings early.

INTRODUCTION

The Avalanche Rescue Commission of IKAR meets yearly at the Annual Meeting of the IKAR. In some years a special winter skills meeting may be held. Within the Avalanche Rescue Commission is a sub-group of rescue dog handlers. These rescuers host typically a summer time meeting. (Notes on the June 2009 meeting are included at the beginning of this report.) It is my privilege to represent the MRA on the IKAR Avalanche Rescue Commission. I serve as the vice-president of the Avalanche Rescue Commission.

The Mountain Rescue Association (MRA) benefits from participation in IKAR in many ways. Perhaps the most important benefit is the opportunity to gain knowledge and skills from the leaders of mountain rescue from around the world, especially in Europe. The knowledge and skills learned can help MRA teams and members do their jobs faster and safer. In recent years the reach of IKAR has been expanding beyond Europe and North America. Japanese representation has been present for several years.

The Avalanche Rescue Commission provides a forum discussion and exchange of ideas. The commission also generates guidelines related to avalanche rescue that are typically adopted at national levels. In the past, the Avalanche Rescue Commission recommended the use of the single 457 kHz frequency for avalanche rescue beacons, the international 5-level danger ratings, and standardized marking colors for avalanche rescue, additional recommendations can be found at the IKAR website: www.ikar-cisa.org > Avalanche Rescue > Recommendations.

The Avalanche Rescue Commission is a comprehensive composite of the international avalanche community represented by national mountain rescue associations, avalanche research and forecasting institutions, national alpine clubs, and avalanche-rescue equipment manufacturers.

2009 SUMMER ACTIVITIES AND ACTIONS

Summer Search — Croatia, June 11–14

Approximately 35 avalanche rescue dog handlers and their hounds meet at Mt Velebit, Baske Ostarije, Croatia to share summer-time search strategies, tactics, and training techniques. Organized by the Hrvatska gorska služba spašavanja - HGSS (Croatian Mountain Rescue Service) participants came from across Europe including the UK and Norway.

Electromagnetic Compatibility of Avalanche Beacons — July 2

At the end of last spring word circulated across the Internet about personal/rescue handheld radios turning off or on certain avalanche beacons. Knowledge of this possibility has been known by avalanche professionals for years; however, the information was probably not shared well to the public. Members — including Atkins — of the Avalanche and Terrestrial Commissions worked with beacon companies and electronic experts and prepared a statement for the public.

Below is the statement:

Electromagnetic Compatibility of Avalanche Beacons

ICAR - IKAR - CISA Statement - Avalanche Rescue and Terrestrial Rescue Commission - 07.02.2009

Considering the recent public discussion on the EMC (ElectroMagnetic Compatibility) of some avalanche beacons, we state that

1. All electronic devices are subject to EMC issues. Various types of interaction are possible, e.g. via RF radiation, static magnetic fields or even by the presence of materials with high magnetic permeability near a device.
2. Interaction is not limited to particular products from specific manufacturers; it can be observed among all products with similar characteristics.
3. All avalanche beacons use antennas made of a ferrite rod and a coil, and such antennas are tuned to the nominal operating frequency of 457 kHz. Any piece of material exhibiting significant magnetic permeability near the antenna of an avalanche beacon may detune the antenna and thus cause a reduced performance in terms of transmitted signal strength or receiver sensitivity.
4. Some products use a combination of a Reed contact and a small permanent magnet to achieve waterproof switching of the main functions OFF - TRANSMIT - RECEIVE. Such devices may be sensitive to magnetic fields emanating from other devices, such as small loudspeakers in portable radios, detached speaker-microphones or even magnetic button closures on garments or magnetic name tags. However, such interaction is limited to very small distances, usually below 4 inches (10 cm). In case of an avalanche, the position of an avalanche beacon relative to other devices may not be under control. It is very simple to determine a minimum distance for no interaction by a practical test using the devices under investigation.
5. Users of avalanche beacons should carefully read the owner's manual that came along with the beacon and watch for statements about EMC.
6. The best way to avoid any EMC problems is to keep devices separated from each other as much as possible.

A copy can be downloaded at www.ikar-cisa/documents/2009/ikar20090208000341.pdf.

SEPTEMBER 23, WORKSHOP

Field Day Workshop

The Avalanche Commissions organized a field day on the Breithorn plateau (3800 m) above Zermatt. About 150 rescuers visited the 13 different stations, which represented avalanche rescue beacon companies, new locating technologies, personal safety equipment, and rescue techniques. The individual stations were:

1. Backcountry Access — avalanche rescue beacons. Participants got hands-on experience with their new 3-antenna transceiver, and tips for conducting deep-burial searches. For more information visit www.backcountryaccess.com.
2. Barryvox — avalanche rescue beacons. Participants got hands-on experience using the Pulse transceiver for both single and multiple burials. For more information visit www.mammut.ch.
3. Ortovox — avalanche rescue beacons. Participants got hands-on experience using the S1 transceiver for both single and multiple burials. For more information visit www.ortovox.com.
4. Nic-Impex — avalanche rescue beacons. Participants got hands-on experience using several models of ARVA beacons for both single and multiple burials. Also, Nicpex uses some clever banners for field instruction. Nic-Impex also licenses the Barryvox secondary frequency so the new Nic-Impex ARVA Link beacon and Barryvox Pulse can share data. These French transceivers are excellent but can be difficult to find in the US. For more information visit www.arva-equipment.com.
5. Pieps — avalanche rescue beacons. Participants got hands-on experience using the DSP transceiver for both single and multiple burials and the use of the iProbe, a smart probe that gives both an audible and visual indication when probe is within 50cm of any transmitting beacon. For more information visit www.pieps.com.
6. Extrication and Triage — Conducted by Manuel Genswein and Swiss mountain rescue doctor Bruno Durr, participants got hands-on experience digging out and carrying for the buried avalanche victim. The actions learned may be critical in enhancing survival of buried victims. Very few US mountain rescue teams have experience providing initial care and treatment of buried avalanche victims. Some important tips include:
 - Dig using an organized shoveling technique (either strategic shoveling or V-shaped conveyor methods).
 - Handle the buried victim very gently as hypothermia will almost always be present.
 - Perform ABC's.
 - Treat other injuries as appropriate.
 - Don't be afraid to briefly expose body parts as necessary to visualize problems.
 - Treat and guard against hypothermia.
7. ABS — avalanche air bag system and remote control. Participants got to observe and try new ABS packs, carbon-fiber cartridges, and the remote deployment system. In a small number of accidents the victim(s) did not or could not deploy their air bags. To avoid these situations ABS has developed a wireless activation system that would allow others in a group to activate another member's airbag. For more information visit www.abs-airbag.com.
8. Snowpulse — avalanche air bag system. Participants got to observe this Swiss air bag that differs from the German ABS by inflating around the user's chest and head. The Snowpulse system provides protection to the user and may provide for a more upright body position when the avalanche stops. This system uses ambient air that can be filled by a dive or paint-ball shop. For more information visit www.snowpulse.com.
9. Kaufmann Avalanche Probe — collapsible probe for rescue teams. Participants got to use this

3 m long Swiss probe that comes in either 5 or 6 sections that are screwed together. The sections overlap giving a sturdy and stiff probe. For more information visit www.kaufmann-mechanics.com.

10. Lambda:4 — radar system. Participants got to try this new Recco-like prototype radar system. Unlike Recco that uses a passive (no battery) reflector, the Lambda:4 system uses an active (battery powered) transmitter. No prices or availability have been set for this prototype system. Lambda:4 is a German research and design lab specializing in high frequency technology and radio engineering. For more information visit www.lambda4.com.

11. Hepkie ResQU — mobile phone locating system. Participants got to try this prototype GSM cell phone detector that can be used in wilderness (including avalanche) and urban SAR. This innovative system utilizes it's own base station and detector to contact any or specially designated GSM phones. The system has great range, currently up to 6 km, and accuracy, about 30cm. The range should improve reaching a maximum of about 30 km (typical range of GSM phones) as their equipment improves. For more information visit: www.hepkie.com.

[Note: A French Telcom company and Thales Communications developed something similar more than 5 years ago, but it was very heavy, expensive and had a limited range of about 1 km. The technology has been licensed to a US firm, but I don't know the status of the system. Recently, a Norwegian company has privately demonstrated and successfully a system very similar to the Swedish ResQU.]

12. Crevasse rescue — Jelk Tripod and Kong System: Swiss and Italian rescuers demonstrated two different tripod systems for crevasse rescue. The Jelk tripod can easily be deployed from one side of the crevasse and winches operated with a power drill. In Switzerland a heavy crevasse system including generator can be flown to accident sites. The Kong Cevedale tripod can also be deployed from one side, but its winches are only hand operated. Both systems were effective.

The Swiss use rope buckets, which are easy to use rather than rope bags. The Italians also demonstrated Kong's 2-man litter system that uses a suspended carbon-fiber backboard. For more information visit www.kong.it.

Daisy Bell — remote avalanche explosive system. During the day participants got to watch the TAS Daisy Bell system in action. This helicopter borne uses a mixture of hydrogen and oxygen and allows upwards of 50 successive shots that can be controlled by the from the helicopter. The blasts are detonated just above the snow surface, and when the weather is acceptable this system allows for fast avalanche mitigation over large areas. For more information visit: <http://tas.groupemnd.com/en/daisybell/daisybell.html>.

Below are some photos of the field day.



The tram ride to the Breithorn.



On the Breithorn plateau, Zermatt.



Organized digging.



ABS avalanche airbag system, deployed.



Hepkie ResQU mobile phone locator (does not show base station).



Daisy Bell gas exploder.



ABS avalanche airbag system, deployed.



Syncing the wireless activation system for ABS.



Snowpulse airbag, deployed.



A rope bucket is easy to use.



Jelk tripod, notice drill and chisel hanging from below the winches.



Kong Cevedale tripod .



Electric drill used to power the winch.



Kong litter system uses a carbon fiber backboard placed inside a casualty bag.



A gasoline-powered generator can be flown to the site to power the electric tools.



Kong bag is suspended in a metal frame, which can be carried by two litter carriers.

SEPTEMBER 24, COMMISSION MEETING

Commission president Hans-Jürg Etter (CH) welcomed more than 60 participants from more than 15 countries. Mr. Etter was joined by the commission's vice president, Dale Atkins (US).

The meeting was held in both German and English with Mr. Manuel Genswein (CH) serving ably as translator.

Summary of Avalanche Accidents, 2008–09

Accident case reports or season summaries were presented by eight member countries. Lessons learned were highlighted, and the theme of risk management was often heard too.

Austria: Twenty-three people died in avalanche accidents including 6 in one late season accident.

Case Report – On May 2, 6 east European backcountry skiers were buried and killed near Soelden. The skiers were descending Schalfkogel peak when they got off route because of bad weather and poor visibility. Instead of stopping and waiting they chose to continue. The avalanche was witnessed but poor weather and significant avalanche danger prevented rescuers from searching that afternoon and evening. On Sunday, after the weather had improved, rescuers flew to the site and with transceivers quickly found the buried bodies under 1 to 2 meters of debris. This was the worst avalanche accident in Austria since 2000. Surprisingly, rescuers got grief in the media for not responding right away despite the dangerous conditions.

USA: The 27 avalanche fatalities were just below the 10-year average (28). Once again snowmobilers accounted for the most fatalities by a single activity (16). Exceptional were 3 deaths within ski areas on open terrain. Unusual weather conditions early in the season created a dangerous snowcover that was difficult to manage because of the spatial variability of the weak layer. In many areas a significant crust sandwiched between weak layers allowed fractures to propagate linking weak zones. In a typical year such a crust would not exist or be much weaker and fractures would tend not to link weak zones.

Case Report – Atkins presented the rescue of an avalanche accident that occurred in Yosemite National Park involving a seriously injured Korean climber. The National Park Service properly utilized their risk management plan that resulted in the rescue being delayed overnight because natural wet-snow avalanches were still occurring. Fortunately, the injured climber survived the night and by morning a solid freeze stabilized the snow and greatly reduced the danger. The victim was short-hauled out.

Case Report – Dean Cardinale presented a accident report of a tragic in-bounds accident at Snowbird resort. An estimated 300 skiers had tracked through the slope before it avalanched. One skier was buried and killed. Dean also talked about the challenges the ski patrol faced in having to manage large numbers of guests who were already on the site and searching before the patrol arrived.

Germany: I have lost my page with these notes, however, two items of interest can be mentioned. In one incident a victim deployed his avalanche airbag but the pack was ripped from his body. He did not survive but the avalanche occurred in extremely rugged terrain. In another incident a victim was pushed through the ice and into a lake. While this sort of accident is unusual to do occur. See Switzerland report below. Also, in the US (Colorado) an avalanche victim was swept into a lake and drowned (28 November, 2001).

Norway: The 2008/2009 winter was another dry and mild winter (38th mildest on record). There were 25 avalanche rescue resulting in 10 rescue missions. Four victims died.

France: It was the worst year for accidents since 1989/90. A prolonged dry spell in November caused the early season snows to become weak and created very stable conditions for later storms. Thirty-five people died, and many of the accidents involved mountain guides.

Italy: The weather and avalanche conditions were similar to those in France. There were 66 avalanche accidents in which 21 people died. Many large avalanches struck homes, buildings, and roads, but fortunately, no deaths occurred.

Canada: The 26 avalanche fatalities were far above the 10-year average of 15. Unusual weather conditions resulted in avalanche conditions that had not been seen in at least 30 years (and likely longer). The most tragic accident involved 11 snowmobilers of whom 8 ended up dying in two back-to-back avalanches.

Case Report – Ian Tomm reported about the Harvey Pass accident near Fernie where one group of riders near Harvey Pass were hit by an avalanche and their friends responded immediately. While these men were digging out their friends they were hit by a second avalanche. Only 3 men survived and these men lost all of their rescue equipment including their snowmobiles. The accident resulted in a media frenzy both in both Canada and the States. Unfortunately, despite the best efforts of the Canadian Avalanche Association, the media transmitted a lot of misinformation, including that the victims were experienced but in reality were not. This led to politicians making uninformed statements, and in some instances criticisms of the rescue.

Switzerland: There were an average number of accidents (80) with 28 people killed. Many accidents occurred on the glaciers near borders where multiple languages and incident commanders were involved. The rescues tended to be performed well because most of the teams had worked together.

Case Report – Etter presented a case report involving 7 priests that were snowshoeing to a mountain hut above Siviez (near Verbier). Four of the men were caught and swept onto the frozen lake. None carried transceivers. Three were buried and killed; 2 of the victims were found within a day or two of the avalanche, but the third victim was pushed through the ice. His body was recovered during the summer after the water level was lowered.

Results From 2009 Workgroups

Information for Dog Handlers, Albert Lunde (Norwegian Red Cross, NO) — tasked to investigate why sometimes avalanche rescue dogs are successful and sometimes they are not. An initial study methodology has been developed and basic questions have been formulated. Lunde will work more with this working group during the coming winter.

Dog Handler Sub-Commission — Avalanche rescue dog handlers often do summertime search and with the interesting of rescue dogs the avalanche dog handlers met to be recognized as an official sub group sub group within IKAR. The group has asked for one day to be dedicated to their efforts and for the Avalanche Commission to include in its accident records the manner of how people are found. Heini Malue (Bergwacht Bayern, DE) will chair the sub committee. This is a great opportunity for dog handlers to learn from their peers. Dean Cardinale of Wasatch Backcountry Rescue (UT) will be involved, but MRA involvement should be encouraged.

Glossary and Standardization of Key Terms, D. Atkins and M. Genswein: Atkins migrated the 15-year-old IKAR glossary (prepared by Pavle Segula (SL)) into Microsoft Word. The goal is to expand the glossary from 6 languages to 13+. Currently the glossary covers more than 1700 snow- and avalanche-related terms. The glossary will be made available on the IKAR website, both as a download (.doc format) and as a searchable on-line glossary. The glossary will also be linked to other international glossaries in member countries.

Genswein presented a draft of standardized key terms for search phases. The common terms are primarily used for transceiver searching; however, can be applied to all search methods. Standardizing the terms allows for easier exchange across languages. The recommendation RECL 0009E is available on the IKAR website:
www.ikar-cisa.org/ikar-cisa/documents/2009/ikar20091208000426.pdf

Avalanche Prevention and Best Practices, Clair Isrelson (CA): Over the past couple of years Isrelson directed a team to survey avalanche prevention efforts in various countries to define the best practices. 13 countries participated in this first-of-its kind study, information was reported voluntarily and might be incomplete. Results were categorized into the following 5 sections:

- Public avalanche / weather forecasts
- Avalanche education for recreationists
- Safety of public and private infrastructure
- Safety precautions for rescue units
- Organization of avalanche rescue

From this Canadian Avalanche Association study the following recommendations were made.

1. A credible professional organization issues scheduled avalanche forecasts for popular winter mountain recreation areas.
2. Avalanche training courses for non-professionals are readily available.
3. Comprehensive programs protect highly used public places from avalanches.
4. Avalanche professionals require specialized training / credentials / certifications.
5. Organized avalanche rescue services exist for all avalanche prone areas of the country.

The complete recommendation accepted by the Avalanche Rescue Commission, RECL 0008 is available on the IKAR website:

<http://www.ikar-cisa.org/ikar-cisa/documents/2009/ikar20091208000418.pdf>

Search Strip Widths, Jürge Schweizer (CH): Defining a search strip width means finding an optimal balance between chances of survival and probability of detection. Schweizer provides a review of previous studies. Subsequent to the discussion of the topic in Pontresina, Genswein developed a simulation to determine a search strip width that provides optimal chances of survival. Schweizer expands on technical aspects and describes 4 different methods/variations of determining a search strip width. In the discussion, method 3 (incl. the simulation) finds acceptance. This method has the specific advantage of taking technical innovation into consideration, without having to modify the system. Franz Kröll (Ortovox) mentions that he will verify the method with his own data.

Schweizer's preferred method is the following:

1. All manufacturers of avalanche rescue beacons shall determine the so-called "realistic maximum range" as specified in the appendix.
2. The signal search strip width to be marked on the transceiver is then
 - (a) about equal to 1.25 (\pm 0.1) times the realistic maximum range for beacons without digital signal processing (DSP),
 - (b) about equal to 1.35 (\pm 0.1) times the realistic maximum range for beacons with 1 receiving antenna and with DSP, and
 - (c) about equal to 1.45 (\pm 0.1) times the realistic maximum range for beacons with 2 receiving antenna and with DSP.
3. In the user manual the manufacturer shall specify the type of cooperation required by the rescuer (for example, the need to slowly rotate the transceiver during signal search).

Schweizer's proposal for the determination of the optimal search strip width (useful range) is accepted unanimously as an ICAR recommendation.

The complete recommendation accepted by the Avalanche Rescue Commission, RECL 0007 is available on the IKAR website:

<http://www.ikar-cisa.org/ikar-cisa/documents/2009/ikar20091208000422.pdf>

Avalanche Accident Statistics, 2008–09

The 198 reported avalanche deaths (table 1), from member countries, were well above to the long-term (25-year) and 10-year averages (154 and 156 respectively). Avalanche fatalities are tallied over the hydrologic year from 1 October to 30 September.

Country	Backcountry skiing / snowboard	Freeride (off piste / out-of-area)	In Ski Area (piste)	Alpinist	Roads	Buildings	Snow-mobile	Other	Total
Andorra	–	–	–	–	–	–	–	–	NR
Austria	23	5	0	4	0	0	0	0	32
Bulgaria	0	1	0	0	0	0	0	0	1
Canada	2	4	0	1	0	0	19	0	26
Croatia	–	–	–	–	–	–	–	–	NR
Czech Republic	1	1	0	0	0	0	0	0	2
France	17	10	0	2	0	0	0	6	35
Germany	2	6	0	0	0	0	0	0	8
Great Britain	0	0	0	3	0	0	0	0	3
Iceland	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0	0	0
Italy	9	2	0	4	0	0	0	6	21
Liechtenstein	0	0	0	0	0	0	0	0	0
Norway	1	1	0	1	0	0	1	0	4
Poland	–	–	–	–	–	–	–	–	NR
Romania	0	0	0	0	0	0	0	0	0
Switzerland	6	10	0	4	0	0	0	8	28
Slovakia	2	0	0	2	0	0	0	0	4
Slovenia	–	–	–	–	–	–	–	–	NR
Spain & Cantalonia	1	3	0	0	0	0	0	0	4
Sweden	0	0	0	0	0	0	2	1	3
USA	4	1	3	1	0	1	16	1	27
Total	68	44	3	22	0	1	38	22	198
%%.%	34.3	22.2	1.5	11.1	0.0	0.5	19.2	11.1	100

Table 1. Avalanche deaths from IKAR countries, 2008/09.

Avalanche Rescue Topics

Avalanche Rescue In Urban Areas (Arni Jonsson, ICE-SAR) — Civil Engineer and mountain rescuer Jonsson gave an insightful presentation about the unique challenges of avalanche rescue in the urban setting. Besides his own experiences from large urban accidents in Iceland in the mid-1990s Jonsson also investigated other urban accidents and rescue plans. Urban avalanche SAR requires the combined efforts of mountain and urban rescuers working together. Pre-planning and practice are required for successful actions when disaster strikes.

Italian Skier Safety Law (?) — In January 2009 the Piemonte state of Italy passed a large ski area/skier safety type law. A tiny section of that law (Chapter 4, Article 30, Paragraph 2) requires that “free riders” venturing off piste must be equipped with electronic devices, probe and shovel. The law has not had a noticeable affect on skiers and snowboarders; however, it has reduced the number of calls for help or delayed the calls as people (participants or witnesses) do not want to get involved into a potential legal action. Politicians in the US would be wise to note the unintended consequences of this law.

SEPTEMBER 25, JOINT MEETING — AVALANCHE AND TERRESTRIAL COMMISSIONS

At this point of the meetings I had to return back to the States. The Terrestrial report by Dan Hourihan has covered the presentations that were more ground based, however, can be applied in an avalanche setting. For more information please download a copy of Dan's report: <http://mra.org/training/ikar.php>

OCTOBER 11, PRESENTATIONS TO JOINT SESSION – ALL COMMISSIONS

Presentations from the different commissions were presented to the entire membership. Below are the avalanche-oriented presentations. Special thanks to my colleagues in the Avalanche Commission for sharing their notes with me.

Severe Avalanche Accidents

Andreas Bardill (CH – Swiss Alpine Rescue) described how the Swiss Alpine Rescue system responds to large and complex avalanche rescues. Their system is one that relies on well coordinated and practiced pre-plans and plans. Upon the alert of an avalanche accident 5–10 rescuers with a dog team(s) are mobilized and generally can arrive at the accident site within 20 minutes of the alarm. A large mobilization of additional rescuers and resources are generally on site within 45 minutes.

Avalanche Response in Catalonia

Francesco Carola (ES – Bombers de Catalunya) described how the national fire department (responsible for mountain rescue) is organized and responds to avalanche rescues both nationally and internationally (France).

Avalanche Deaths in Canada

Jeff Boyd MD (CA) lead a comprehensive investigation of Canadian avalanche deaths from 1984 to 2005 that examined the cause of death of 204 fatalities. When all activity categories were combined asphyxia accounted for 75% of deaths; trauma, 24%; and hypothermia 1%. However, when activities (like backcountry skiing, snowmobiling, climbing, etc) were reviewed the cause of death varied significantly. Backcountry skiing mirrored the general statistics, but one-third of out-of-area/bounds skiers died from trauma. Ice climbers suffered the highest rate of trauma (42%) and snowmobilers the lowest (9%). Also the study looked more closely at trauma and found that traumatic injuries are regularly experienced by avalanche victims. This information may serve as good guidance when rescuers head out the door as to what to expect when responding to an avalanche rescue. The complete study can be found at www.cmaj.org.

2010 MEETING – Slovakia

The 62nd IKAR Congress will be held in Slovakia, October 5–8, 2010. The field day will focus on rock rescue.

The main topic for the Avalanche Rescue Commission to address will be if certifications should be required of members involved in avalanche SAR .

RECOMMENDATION REGARDING THE MRA INVOLVEMENT IN FUTURE IKAR MEETINGS

It is this writer's opinion the MRA remain involved in IKAR. The exchange of ideas, knowledge, and skills, is of huge benefit to the MRA membership. The analysis, consideration and/or application of this information, skills, and equipment can benefit all teams from training to actual mission operations. IKAR can help MRA teams become better, safer, and more efficient rescuers. The challenge to the MRA is better bring and share this knowledge to the MRA community. I look forward to helping.

DISCLOSURE

I, Dale Atkins, am a volunteer MRA member (Alpine Rescue Team, Evergreen CO) and I am also employed by RECCO AB. RECCO AB, paid for my conference fees and lodging costs at the 2009 IKAR congress, reducing the costs of the MRA's participation. I am very aware of the potential for conflict of interests and have in the past withdrawn myself from specific voting actions. During the 2009 meeting no voting took place involving the RECCO system.